

motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims. Each of the independent claims recite evaporating an organic electroluminescence material in an inert gas atmosphere. Antoniadis and Onitsuka, either alone or in combination, do not teach or suggest at least the above-referenced features of the present invention. The Official Action concedes that Antoniadis "does not teach that the vacuum atmosphere should be an inert gas" (pages 2-3, Paper No. 021005) and asserts that Onitsuka "teaches that the layers may be deposited by vacuum evaporation" and "the EL layer forming steps in the presence of an inert gas" (page 3, Id.). The Applicant respectfully disagrees and traverses the above assertions in the Official Action.

Contrary to the assertion in the Official Action, Onitsuka fails to teach or suggest evaporating an organic electroluminescence material in an inert gas atmosphere. Although Onitsuka discloses "an inert gas," the use of the inert gas in Onitsuka is for purposes other than evaporating an organic electroluminescence material, i.e. the inert

gas atmosphere in Onitsuka appears to be used during a process for removing residual water from the atmosphere prior to applying an adhesive to joint portions (column 11, lines 32-39).

Onitsuka appears to teach that a "gastight space D40 is filled with an inert gas" (column 5, lines 66-67), but the gastight space D40 already contains fully formed organic EL multilayer structure D10. Although Figure 5 of Onitsuka appears to show that reference numerals 11 to 15 are working vacuum chambers in which organic EL multilayers are formed by evaporation (column 11, line 56, to column 12, line 38), this portion of the process does not teach or suggest that organic EL multilayer formation steps are performed in an inert gas atmosphere. Rather, in Onitsuka, it appears that an inert gas atmosphere is only applied when joining a shield member to a substrate with an adhesive (e.g. column 2, lines 60-65, and column 3, lines 47-54).

Specifically, for example, in the method of Onitsuka, "components of the organic EL display device are carried in" to fore-chamber 120 as shown in Figure 4 (column 10, lines 1-2); chambers 110, 120 and 130 are connected to an inert gas source 150 (column 10, lines 10-11); and fore-chamber 120 is heated to "evaporate off" residual water in the components of the organic EL display device (column 10, lines 27-32). A similar series of events is discussed at column 10, line 66, to column 11, line 49. In other words, the components of the EL display device are already formed and the formation of the actual EL display device is not discussed in detail in Onitsuka. Also, the "evaporation" in the method refers to water in the components of the organic EL display device, not the formation of the components of the organic EL display device themselves. Therefore, Antoniadis and Onitsuka, either alone or in combination, do not teach or suggest evaporating an organic electroluminescence material in an inert gas atmosphere.

The "Response to Arguments" section of the Official Action appears to dismiss the arguments presented above and asserts that the "argument is unconvincing because the last sentence of the abstract explicitly states that the steps of forming

layers on substrates to form organic EL multilayers are carried out in inert gas atmospheres" (page 7, Paper No. 021005). Although the abstract of Onitsuka states that "steps of forming layers on substrates to form organic EL multilayer structures and the steps of adhesively joining shield members to the substrates are carried out in inert gas atmospheres," Onitsuka does not teach or suggest evaporating an organic electroluminescence material in an inert gas atmosphere. Also, the disclosure of Onitsuka does not support or enable the above-referenced sentence in the abstract.

Specifically, Onitsuka does not teach or suggest that an EL layer is formed in an inert gas atmosphere. In Onitsuka, as argued previously, reference numerals 11 to 15 appear to indicate vacuum chambers in which EL layers are formed by evaporation in the vacuum atmosphere (e.g., column 3, lines 35-54, and column 11, line 56, to column 12, line 38). Moreover, in Onitsuka, it appears that an inert gas is applied when joining a shield member to a substrate with an adhesive in order to fill a gastight space with an inert gas (e.g., column 3, lines 35-54, column 2, lines 60-65, and column 3, lines 47-54).

In addition, in Figure 5 of Onitsuka, gas lines for supplying an inert gas appear to be connected only between inert gas source 150 and assembly section MP. Thus, an inert gas is not provided to film forming section LP.

Further, the Onitsuka reference is not an enabling disclosure with respect to the feature that the layers are formed in an inert gas atmosphere. Please see MPEP § 2121 in this regard for a general discussion of this principle. The disclosure in the abstract (of inert gas) is insufficient in view of the more detailed disclosure in the specification (of a vacuum chamber) such that one of skill in the art would not be enabled by this disclosure to practice the inventive feature, i.e. formation of the layers in an inert gas atmosphere. That is, one of skill in the art could not practice formation in an inert gas atmosphere since the detailed disclosure would require that it be practiced in a vacuum.

Therefore, inert gas is not provided in forming EL layers, and Antoniadis and Onitsuka do not teach or suggest evaporating an organic electroluminescence material

in an inert gas atmosphere. Since Antoniadis and Onitsuka do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

Furthermore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Antoniadis and Onitsuka or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be used together, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

The test for obviousness is not whether the references "could have been" combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

As noted above, the Official Action concedes that Antoniadis "does not teach that the vacuum atmosphere should be an inert gas" (pages 2-3, Paper No. 021005) and asserts that Onitsuka "teaches that the layers may be deposited by vacuum evaporation" and "the EL layer forming steps in the presence of an inert gas" (page 3, *Id.*). The Official Action asserts that "[it] would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed the vacuum deposition of '688 [Antoniadis] in the inert gas of '167 [Onitsuka] because '167 teaches that organic EL layers may be deposited by vacuum evaporation in inert gas, and

further because ‘167 suggests that the use of inert gas avoids degradation that would have been experienced using moisture-containing atmospheres” (*Id.*). The Applicants respectfully disagree and traverse the above assertions in the Official Action.

The limited disclosure in the abstract and the more detailed contrary disclosure in the specification appears to negate the alleged motivation for one of skill in the art to combine the references as asserted. That is, Onitsuka appears to teach that an inert gas is applied when joining a shield member to a substrate with an adhesive in order to fill a gastight space with an inert gas, but Onitsuka does not teach evaporating an organic electroluminescence material in an inert gas atmosphere. As such, it is not clear how or why it would have been obvious to apply Onitsuka to Antoniadis.

Also, it is not clear why one of ordinary skill in the art who was concerned with “degradation that would have been experienced using moisture-containing atmospheres” would not have simply practiced Onitsuka alone. It is unclear why it would have been desirable to combine Antoniadis and Onitsuka at the time of the present invention. Specifically, it is not clear why it would have been necessary to use the elaborate system shown in Figure 5 of Onitsuka when forming the device of Antoniadis. Therefore, the Official Action has not shown sufficient motivation in Antoniadis or Onitsuka to teach or suggest that the references could or should be combined.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Paragraphs 6-12 of the Official Action reject claims 9-12 and 17-41 as obvious based on the combination of Antoniadis, Onitsuka and one or more of the following: U.S. Patent No. 5,945,967 to Rallison et al., U.S. Patent No. 5,534,314 to Wadley et al., U.S. Patent 6,495,198 to Peng, U.S. Patent No. 6,537,607 to Swanson, U.S. Patent No. 5,921,836 to Nanto et al., and U.S. Patent No. 4,672,265 to Eguchi et al. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

Please incorporate the arguments above with respect to the deficiencies in Antoniadis and Onitsuka. Rallison, Wadley, Peng, Swanson, Nanto and Eguchi do not cure the deficiencies in Antoniadis and Onitsuka. The Official Action relies on Rallison to allegedly teach EL displays for video camera displays (page 4, Paper No. 021005), on Wadley to allegedly teach evaporation at atmospheric pressure (*Id.*), on Peng to allegedly teach moving a substrate and a source in relation to one another (page 5, *Id.*), on Swanson to allegedly teach moving a substrate and a source in relation to one another and patterning without a mask (pages 5-6, *Id.*), on Nanto to allegedly teach moving an evaporation support (page 6, *Id.*), and on Eguchi to allegedly teach an evaporation cell made of tungsten (page 7, *Id.*). However, Antoniadis, Onitsuka and one or more of Rallison, Wadley, Peng, Swanson, Nanto and Eguchi, either alone or in combination, do not teach or suggest evaporating an organic electroluminescence material in an inert gas atmosphere or cure the lack of motivation to combine Antoniadis and Onitsuka. Since Antoniadis, Onitsuka and one or more of Rallison, Wadley, Peng, Swanson, Nanto and Eguchi do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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